

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION**

In re Flint Water Cases.

Judith E. Levy
United States District Judge

_____/

This Order Relates To:

Carthan, et al. v. Snyder et al.
Case No. 16-10444

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**OPINION AND ORDER DENYING DEFENDANTS VEOLIA
NORTH AMERICA, LLC, VEOLIA NORTH AMERICA, INC., AND
VEOLIA WATER NORTH AMERICA OPERATING SERVICES,
LLC’S MOTION TO EXCLUDE THE TESTIMONY AND REPORT
OF DR. PANAGIOTIS (PANOS) GEORGOPOULOS [2483]**

This opinion is still another in a series of opinions addressing the admissibility of the testimony and reports of nine experts retained by Plaintiffs¹ in anticipation of the issues class trial, set to begin on

¹ See ECF No. 2454 (VNA’s motion to exclude opinions and testimony of Dr. Larry Russell); ECF No. 2455 (VNA’s motion to exclude opinions and testimony of Dr. Clifford P. Weisel); ECF No. 2456 (VNA’s motion to exclude testimony and reports of Robert A. Michaels); ECF No. 2458 (VNA’s motion to exclude opinions and testimony of Dr. David Keiser); ECF No. 2459 (VNA’s motion to exclude opinions and testimony of Dr. Daryn Reicherter); ECF No. 2460 (VNA’s motion to exclude opinions and testimony of Dr. Paolo Gardoni); ECF No. 2461 (VNA’s motion to exclude opinions and testimony of Dr. Howard Hu); ECF No. 2483 (VNA’s motion to exclude opinions and testimony of Dr. Panagiotis (Panos) G. Georgopoulos); and ECF No. 2462 (VNA’s

February 13, 2024. (ECF No. 2435.) Defendants argue that these experts cannot meet the standards set by Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

Currently before the Court is the motion by Veolia North America, LLC, Veolia North America, Inc., and Veolia Water North America Operating Services, LLC (collectively “VNA”) to exclude portions of the testimony and supplemental report of Dr. Panagiotis (Panos) Georgopoulos (ECF No. 2485). On September 13, 2023, a hearing was held and oral argument was heard. For the reasons set forth below, VNA’s motion to exclude is denied.

I. Background

Dr. Panos Georgopoulos is a tenured professor and researcher with expertise in exposure science, biological dosimetry, and pharmacokinetic/toxicokinetic modeling at the Biomedical and Health Sciences department at Rutgers, the State University of New Jersey. He holds a Master’s degree (1982) and a Ph.D. (1986) in chemical engineering, both from the California Institute of Technology. He has

motion to exclude testimony of Dr. Simons) (in ECF Nos. 2606 and 2617, the Court inadvertently failed to include the motion related to Dr. Simons’ testimony in this list).

received dozens of academic appointments, holds memberships in dozens of professional organizations, and has received many honors, awards, and grants for his research. Dr. Georgopoulos has authored or co-authored hundreds of publications. (*See* ECF No. 2483-3, PageID.82273.)

Plaintiffs retained Dr. Georgopoulos to opine on whether the corrosive water conditions allegedly caused by VNA were capable of causing harm to Flint residents, properties, and businesses, which is certified issue 3. Dr. Georgopoulos wrote an expert report in October 2022. (ECF No. 2483-3.) He wrote an expert rebuttal report in March 2023. (ECF No. 2483-5.) Dr. Georgopoulos was deposed twice: first in November 2022 and again in March 2023.

On May 19, 2023, VNA moved to exclude Dr. Georgopoulos' opinions and related testimony because it argues that Dr. Georgopoulos' underlying assumptions in forming his opinions are unreliable for two reasons, the first of which has several sub-parts:

- 1) Dr. Georgopoulos' opinion that class members would likely have had an increased blood lead level during the Flint Water Crisis is not reliable because:
 - a. He fails to base his opinions on any facts or data specific to class members,

- b. He uses three assumptions in his modeling that are contradicted by evidence. The assumptions are:
 - i. The range of water lead levels,
 - ii. How much water was ingested, and
 - iii. Baseline lead exposure levels,and
 - c. He selectively compares his modeled blood lead levels to data on actual measured blood lead levels in Flint.
- 2) Dr. Georgopoulos' opinion that "even low" increases in water lead levels would result in quantifiable increases in blood lead levels is not reliable.

(ECF No. 2483.)

II. Legal Standard

Federal Rule of Evidence 702 governs the admissibility of expert testimony and requires that: (1) the witness must be qualified, (2) the testimony must be relevant, and (3) the testimony must be reliable. Fed. R. Evid. 702; *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 528–29 (6th Cir. 2008). As the Supreme Court set forth in *Daubert*, Rule 702 imposes a "gatekeeping" obligation on the courts to ensure that scientific testimony "is not only relevant, but reliable." *Daubert*, 509 U.S. at 589; *See also Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147 (1999).

In *Daubert*, the Supreme Court provided a non-exclusive list of factors courts may consider when evaluating reliability: (1) whether the theory or technique at the basis of the opinion is testable or has been tested, (2) whether it has been published and subjected to peer review, (3) what the known error rates are, and (4) whether the theory or technique is generally accepted. *Daubert*, 509 U.S. at 593; *see also In re Scrap Metal*, 527 F.3d at 529 (listing same factors). Not every factor needs to be present in every instance, and courts may adapt them as appropriate for the facts of an individual case. *Kumho*, 526 U.S. at 150.

“Rejection of expert testimony is the exception, rather than the rule.” *United States v. LaVictor*, 848 F.3d 428, 442 (6th Cir. 2017) (quoting *In re Scrap Metal*, 527 F.3d at 529–30)). But the burden is on Plaintiffs to show by a “preponderance of proof” that the proffered expert meets the standards of Rule 702 as interpreted by *Daubert*. *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000) (quoting *Daubert*, 509 U.S. at 592).

III. Analysis

A. Reliability of Dr. Georgopoulos' opinion that class members were likely to have increased blood lead levels during the Flint Water Crisis

1. The AALM and *Palmer*

VNA first challenges the reliability of Dr. Georgopoulos' opinion that class members were more likely to have increased blood lead levels during the Flint Water Crisis. It contends that the model Dr. Georgopoulos uses, which is called the All Ages Lead Model ("AALM"), uses only "hypothetical subjects" based on "hypothetical data," rather than actual subjects (such as class representatives) for which there is actual data. (ECF No. 2483, PageID.82220–82222.) VNA argues that actual data is more reliable than "hypothetical."

First, Dr. Georgopoulos' description of the AALM is helpful and it is summarized here. In his deposition and report, Dr. Georgopoulos set forth in detail why he used the AALM and its utility as a mathematical model. (See ECF No. 2483-3, PageID.82259.) He explains that the United States Environmental Protection Agency (EPA) has been developing, testing, and improving the AALM for over two decades. The most recent

update to the AALM at the time of Dr. Georgopoulos' report was in 2019, and he used the 2019 version in his analysis.

The AALM allows for different types of lead exposure to be analyzed at the same time. For example, the AALM takes into account that lead absorption in humans occurs through the gastrointestinal tract, the respiratory tract, and/or the skin. Each absorbs lead at different rates and then undergoes what Dr. Georgopoulos describes as "exchanges" with lead (which binds to plasma proteins) being deposited in bone, brain, kidney, liver, red blood cells, and other soft tissue. Lead is then excreted at different rates in human hair, nails, skin, sweat, urine, and feces. Dr. Georgopoulos explains that these biokinetic processes in human physiological systems react differently and "exchange" lead uniquely. The AALM allows one to analyze how those variations occur within the ranges of certain water lead level values. The data for estimated blood lead levels at various rates of water lead levels is set forth in Table 1 of Dr. Georgopoulos' report. (ECF No. 2483, PageID.82269.) He explains that Table 1 uses the AALM to provide "estimates [of] the likely elevations in BLL [blood lead levels] among each of the 'persons' considered in relation to the FWC, [and] can provide a means for

classifying categories of exposure that pertain to different levels of adverse impacts on health.” (ECF No. 2483, PageID.82269.)

VNA does not challenge Dr. Georgopoulos’ decision to use the AALM, but rather, it challenges his decision not to use Plaintiffs’ specific data in the model. In response, Dr. Georgopoulos explains that the data he used was derived from multiple academic papers that document the actual levels of air, soil, dust, and diet both in general and in Flint, which, he states, provides well-grounded support for his AALM input parameters. (ECF No. 2508, PageID.83034.) His sources include the Pierre Goovaerts *Science in the Total Environment* article, which other experts have relied upon in this case. He also uses data derived from the State of Michigan Department of Environmental Quality, which included the water lead levels observed during the Flint Water Crisis. Dr. Georgopoulos’ methodology is therefore well-supported.

Additionally, at his deposition, Dr. Georgopoulos explains why he did not use specific class members’ data in his modeling:

I was not trying to model any specific individual. And, as I mentioned, specific individuals may have a variety of different exposures in their life, potentially occupational hazards that would—that would need to be taken into account. I was trying to establish a baseline for a hypothetical person that—that

would provide a common background for assessing the impact of lead elevation in drinking water in 2014.

(ECF No. 2483-4, PageID.82397–82398 (May 23, 2023 Georgopoulos Dep. Trans. pgs. 24–35).) This reasoning and the reasoning set forth in his report provide adequate support for his decision not to use class Plaintiff-specific data, and instead use general data as a baseline. And, of course, Dr. Georgopoulos’ decisions in this regard are a permissible area of cross-examination.

VNA cites to the case *Palmer v. Asarco Inc.*, No. 03-cv-0498, 2007 WL 2298422 (N.D. Okla. Aug. 6, 2007). The plaintiffs in *Palmer* were seven minor children who alleged injury because of exposure to low levels of lead over an extended period of time. They sued the defendant, a mining company, that left piles of mining waste exposed for decades. Plaintiffs alleged that, over time, the wind blew lead particles from the exposed waste to the plaintiffs’ homes. The plaintiffs all tested positive for lead in their blood. The plaintiffs retained a toxicologist, Dr. Snodgrass, who testified at trial that their injuries were caused by lead exposure.

The defendant argued that Snodgrass used improper methodology for determining the existence of an injury. Snodgrass’ report did not

discuss his methodology for reaching his conclusions. Further, Snodgrass made assumptions about each plaintiff's baseline blood lead level, but those assumptions were not supported by actual data from the individual plaintiffs. Snodgrass also testified that the plaintiffs suffered from anemia and lost nerve conductivity, but there are tests for those conditions and no tests were ever performed on the plaintiffs. He also testified that exposure to lead caused the plaintiffs to have Attention Deficit Hyperactivity Disorder ("ADHD"). But he failed to cite any studies in his report to support his opinion that lead exposure is capable of causing ADHD. For these reasons, the court excluded Snodgrass' general causation opinions because they were not reliable.

Palmer involved an expert addressing specific and general causation for seven individual plaintiffs. This case is different. Here, Dr. Georgopoulos' testimony is offered for general causation opinions related to a class of plaintiffs. Plaintiff-specific damages are not included in this issues-class trial. Moreover, unlike Snodgrass, Dr. Georgopoulos explains, in his report and again at his deposition, the methodology he used and why he believes it is scientifically supported and reliable. From the description of Snodgrass's work in *Palmer*, Snodgrass did no such

thing in his report or deposition. The *Palmer* decision related to Snodgrass is not a helpful comparison to the situation here with Dr. Georgopoulos.

2. Three of Dr. Georgopoulos' assumptions used in the model

VNA argues that three of Dr. Georgopoulos' assumptions that he used in his model are unreliable. The assumptions relate to: (a) the City's water lead levels, (b) Plaintiffs' water ingestion levels, and (c) Plaintiffs' baseline lead exposure levels.

As to water lead levels, in his modelling, Dr. Georgopoulos used a range of increased water lead levels with the highest range of 300 µg/L. According to VNA, actual sampling in the City of Flint showed much lower median water lead levels, such as 3.5 µg/L for first draw samples in August 2015. Thus, VNA argues, Dr. Georgopoulos' use of 300 µg/L is not the most accurate data available, rather, it is well-above the median and is not reliable.

Dr. Georgopoulos explains in his report and deposition that he used the 300 µg/L number as an outer limit and that number is based on real data from water samples taken from Flint homes in August and September 2015. (See No. 2483-5, PageID.82460 (2023 Georgopoulos

Rebuttal Decl.).) He explains many times in his deposition that the 300 µg/L was the “upper tail,” meaning, the highest 90–95th percentile of water lead level measurements actually taken. The levels he used in his model ranged from 10 µg/L to 300 µg/L. Moreover, he explains in his rebuttal report that he could have used a number even greater than 300 µg/L because there was an actual sample that was measured at 13,200 ppb in Flint during the relevant time period. But instead, he chose 300 µg/L because it was more aligned with the highest 90–95th percentile of samples. In sum, Dr. Georgopoulos adequately supports his decision to use the 300 µg/L as the “upper tail.”

As to water ingestion levels, VNA challenges Dr. Georgopoulos’ model for its assumption that Flint residents consumed a constant amount of unfiltered tap water for 90 continuous days. VNA notes that, in his deposition, Dr. Georgopoulos admitted that water lead levels can vary across seasons, neighborhoods, and other factors. Plus, the 90-day time period does not apply to people who used water intermittently. Nor does it apply to people who consumed water for more than 90 days. Because the 90-day time frame cannot possibly apply to every person in Flint, VNA argues, it should not have been used in the model. VNA

argues that this is particularly true because there is evidence showing a 70% decrease of water consumption in Flint during the time of the water crisis when the water was documented to taste, smell, and look bad. This was known as a “water avoidance phenomenon.”

Dr. Georgopoulos provides support for why he used a 90-day period. He explains that EPA guidance for modeling lead toxicokinetics using the AALM recommends using a 90-day period. Moreover, Dr. Georgopoulos explains that, if an individual demonstrates a shorter or longer period of exposure, those individuals will likely have correspondingly lower or higher increases in their blood lead levels, which can be calculated using different inputs in the AALM. (ECF No. 2453-5, PageID.82462 (rebuttal report).) Dr. Georgopoulos explains that he could run a simulation demonstrating blood lead levels at varying degrees of lead exposure for varying days of exposure. His decision to use a 90-day input as a baseline, especially when the model allows flexibility to consider individual fluctuations if needed later in this litigation, is therefore well-grounded.

As to lead exposure levels, VNA argues that Dr. Georgopoulos admitted that there are no actual baseline blood lead data for Flint residents collected before the water source switch. VNA has made a

similar unsuccessful argument in this case related to the fact that there were no water pipe samples before the Flint Water Crisis occurred, which, if there had been, would have provided a more accurate water lead level and pipe quality baseline. In addressing this argument, the Court stated, “But who would have guessed that the Water Crisis was about to take place and gathered samples of pipes to measure just in case?” *See In re Flint Water Cases*, No. 16-10444, 2023 WL 5844730, at *4 (E. D. Mich. Sept. 11, 2023) (Opinion and Order Denying [VNA’s] Motion to Exclude the Testimony and Report of Dr. Larry Russell [2454]). VNA’s argument here related to pre-crisis blood lead level sampling suffers from the same problem. Who would have guessed that the Water Crisis was about to take place and gathered baseline blood lead level data for all Flint water consumers? The fact that there was not a complete baseline collection of blood lead level data is not fatal to this case, particularly where, as here, Dr. Georgopoulos provides reasoning that supports the data he used, and the model itself is flexible enough to accommodate situations where there may have been a baseline in an individual case. In sum, Dr. Georgopoulos supports his reasons for the blood lead level estimates he used, and he has provided support for the reliability of his methodology in doing so.

3. Dr. Georgopoulos' rejection of certain data that contradict his opinions on blood lead levels of adults

VNA argues that Dr. Georgopoulos improperly rejects two sets of data because they contradict his conclusions regarding blood lead levels in adults. VNA explains that this data is from the “only two available studies reporting on blood lead levels measured in Flint adults,” both of which found that there was not a statistically significant increase in blood lead levels during the Flint Water Crisis. (ECF No. 2483, PageID.82234.) VNA argues that the reasons Dr. Georgopoulos gave for dismissing this data are not explained, nor are they supported scientifically.

Yet, a review of Dr. Georgopoulos' report and deposition demonstrate that he does explain why he did not consider certain data in his analysis. First, he explains the reasons why he did not use blood lead level data documented by the Michigan Department of Health and Human Services. He explains that when the State of Michigan started collecting blood lead level data for Flint, the State grouped the data based on the zip code of the individual sampled. The problem with organizing the data this way, Dr. Georgopoulos explained, is that the State did not recognize that there were residences in certain zip codes that are outside

the City limits. Those locations were not receiving Flint water. This resulted in the State unknowingly understating the blood lead level for Flint residents, because the data of residents were combined with non-residents who were not receiving Flint water. Accordingly, Dr. Georgopoulos decided not to use this data in his model because he explains it is not accurate for Flint residents only.

Dr. Georgopoulos also explains why he did not incorporate data from the second study (known as the “2019 Gomez et al.” study). He explains that this study did not include a control group. For the 2019 Gomez et al. study, data was collected in three different periods of time during and after the crisis. But the data was not collected from the same individuals each time. This, in Dr. Georgopoulos’ opinion, left too many variables unknown.

Dr. Georgopoulos was also concerned with the fact that the 2019 Gomez et al. study did not consider the water avoidance phenomenon, discussed above, to determine whether any of the participants avoided Flint water. Accordingly, Georgopoulos has provided thorough reasons for why he did not include data from the two studies that VNA believes he should have included in his analysis.

VNA cites to the case *Barber v. United Airlines, Inc.*, 17 F. App'x 433 (7th Cir. 2001) as well as several other out of circuit cases, for the notion that an expert cannot ignore facts and data that do not fit into their theory. In *Barber*, the plaintiff was a passenger on an airplane who was injured during sudden turbulence. She had her seatbelt "loosely fastened" and the seatbelt sign was not on. She hit her head and shoulder on the seat in front of her during the turbulence and later required surgery. She argued that the airline was negligent because the pilot should have seen on the radar that storms were ahead, but instead ignored the weather data. The plaintiff retained an expert whose opinions were excluded by the trial court for lacking reliability. The plaintiff then lost her case at trial because she had no proof that the captain ignored the weather data. She argued on appeal that she should have been permitted to present her expert's testimony. Her expert, Dr. Hynes, had relied on some, but not all of the available weather data in forming his opinion that the pilot ignored storm data. Hynes rejected data that contradicted his position, and he did not explain why he ignored that data. The Seventh Circuit affirmed that Hynes' methods were unreliable and the trial court was correct in excluding his opinions. VNA

argues that this case is a “functionally identical situation” to our case. (ECF No. 2483, PageID.82236.)

VNA is incorrect. Unlike Hynes in *Barber*, Georgopoulos cites to every study and piece of data he used in forming his opinions, and he provides explanations for why he did not use the two sources discussed above. VNA’s argument is therefore rejected.

B. Reliability of Dr. Georgopoulos’ opinion that “even low” increases in water lead levels would likely result in quantifiable increases in blood lead levels

Last, VNA argues that the modeling that Dr. Georgopoulos used to demonstrate that increases in water lead levels would result in quantifiable increases in blood lead levels across age groups cannot be replicated. (ECF No. 2483, PageID.82237.) VNA’s expert, Dr. Finley found that the increases, to the extent he could replicate the model, were so negligible that most labs would not be able to detect or measure them with any level of precision.

Class Plaintiffs respond that this issue relates to credibility and not reliability. The Court agrees. They explain that they provided Defendants with the model inputs and data, and Dr. Finley’s report includes charts that indicate he could replicate the modeling. That Dr.

Finley does not agree with the inputs, or that the results reveal lead poisoning at a detectable level, is not an issue of reliability.² Again, VNA may cross-examine Dr. Georgopoulos on all of these issues.

IV. Conclusion

For the reasons set forth above, VNA's motion to exclude Dr. Georgopoulos' opinions and testimony is denied.

IT IS SO ORDERED.

Dated: September 25, 2023
Ann Arbor, Michigan

s/Judith E. Levy
JUDITH E. LEVY
United States District Judge

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document was served upon counsel of record and any unrepresented parties via the Court's ECF System to their respective email or first-class U.S. mail addresses disclosed on the Notice of Electronic Filing on September 25, 2023.

s/William Barkholz
WILLIAM BARKHOLZ
Case Manager

² VNA's expert Dr. Huber tried to use the model to replicate the results, but was unable to, and Plaintiffs correctly argue that this does not justify excluding Dr. Georgopoulos' conclusions.